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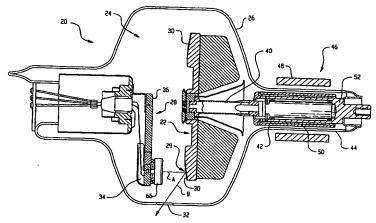
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[Continued on next page]

## (54) Title: X-RAY TUBE CATHODE ASSEMBLY AND INTERFACE REACTION JOINING PROCESS



(57) Abstract: An x-ray tube cathode assembly (28) includes a support arm (36) comprising a first metal. A ceramic insulator (70, 82) has a first metalized surface (72, 86) wherein the metalized surfaces comprise a desired amount of the first metal. A first member of filler material (90) is in contact with the support arm (36) and the first metalized surface (72, 86) of the ceramic insulator (70, 82), the first member of filler material comprising at least a second metal (96a, 96b) wherein a first alloy system (Fig. 5) comprising alloy system minimum melting point (M) for the alloy minimum point percentage composition (P) of the first and second metals having a first point of the first metal and second metal. A bonding region resulting from heating the cathode assembly causing diffusion bonding to proceed, the bonding region has a layer of alloy comprising the minimum point percentage composition (P) and the heating of the cathode assembly continues to a bonding temperature of at least the first alloy system minimum melting point (M) and holding at that temperature for a desired period of time.



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PCT7IB2004/000549 CLASSIFICATION OF SUBJECT MATTER PC 7 H01J35/06 B23k B23K20/16 B23K35/00 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 HO1J B23K Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ C. DOCUMENTS CONSIDERED TO BE RELEVANT Category ° Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Υ US 5 224 143 A (EVAIN BERNARD ET AL) 23,24, 28,29 29 June 1993 (1993-06-29) column 3, lines 58-60 Α 1-22, 25-27, 30 - 34GB 2 049 522 A (ELLIOTT BROTHERS LONDON Y 23,24, LTD) 31 December 1980 (1980-12-31) 28,29 column 1, line 55 - column 2, line 20 Α 1-2225-27. 30-34 Α GB 1 426 873 A (MULLARD LTD) 1 - 343 March 1976 (1976-03-03) page 2, lines 10-60 Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: \*T\* later document published after the international filling date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international invention \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone filing date \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular retevance; the claimed Invention cannot be considered to involve an inventive step when the document is combined with one or more other such document \*O\* document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled document published prior to the international filing date but later than the priority date claimed \*&\* document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 18 November 2004 29/11/2004 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo ni, Fax: (+31–70) 340–3016 Ruiz Perez, S

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